

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JAMES MICHAEL LARSON

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Appeal No. 2006-0435  
Application No. 10/028,173

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ON BRIEF

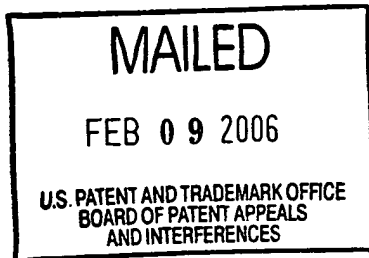
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Before CAROFF, OWENS, and FRANKLIN, Administrative Patent Judges.  
CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-5. Claims 6-17, the other pending claims in appellant's application, stand withdrawn from consideration by virtue of the imposition of a restriction requirement by the examiner. Accordingly, only claims 1-5 are before us on appeal.

The appealed claims relate to a method of making a gas diffusion layer (GDL) for an electrochemical cell which includes



the step of compressing a coated carbon cloth substrate to a compression of 25% or greater.

Appellant makes no significant distinction between the individual claims in advocating for patentability. Accordingly, all of the claims at issue are considered as standing or falling with independent claim 1 for purposes of this appeal. In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986).

Claim 1 reads as follows:

1. A method of making a gas diffusion layer for an electrochemical cell comprising the steps of:

- a) providing a plain-weave carbon fiber cloth;
- b) coating a surface of said plain-weave carbon fiber cloth with a layer comprising carbon particles and one or more highly fluorinated polymers to make a coated plain-weave carbon fiber cloth; and
- c) compressing said coated plain-weave carbon fiber cloth to a compression of 25% or greater; wherein said step of compressing does not include attaching said plain-weave carbon fiber cloth to another layer.

The prior art references relied upon by the examiner are:

Allen et al. (Allen)	4,293,396	Oct. 6, 1981
Fan et al. (Fan)	2002/0134501 A1	Sept. 26, 2002

All of the appealed claims stand rejected for obviousness under 35 U.S.C. § 103(a) in view of Allen taken in combination with Fan.

We have carefully reviewed the record in this case in light of the opposing positions taken by the appellant and by the examiner. Having done so, we are firmly convinced that the prior art references relied upon by the examiner support a prima facie case of obviousness. Accordingly, we shall affirm the rejection at issue.

The basis for our decision follows.

As noted by the examiner, Allen teaches forming a GDL or electrode for electrochemical cells essentially as claimed. However, Allen is silent with regard to any need for a compression step.

Fan also teaches a method for producing similar GDL electrodes where the product (a coated carbon cloth) is rolled between two rolls which exert a force on the cloth sufficient to substantially eliminate cracks in the coating (Fan: designated paragraphs 30 and 31).

In view of the foregoing, we agree with the examiner that it would have been prima facie obvious, within the context of 35 U.S.C. § 103, to apply compression to the GDL electrode of Allen to obtain the benefit (elimination of cracking) taught by Fan.

Appellant is of the view that since the purpose of the rolling step in Fan is to eliminate cracks in the surface coating on the GDL cloth, an ordinary artisan would expect that only "superficial deformation" of the surface would be required to obtain the desired result.

We disagree with appellant on this point for two basic reasons.

First, we are of the opinion that a person of ordinary skill in this field would understand that a substantial compression of the GDL may very well be necessary to effectively eliminate or reduce cracking of the surface coating in view of the soft, pliant nature of the underlying cloth substrate. In other words, in order to generate sufficient force on the surface coating from the rolls, an ordinary artisan might well expect that the cloth substrate would have to be substantially compressed. In this regard, we note that the cloth substrate is generally a porous fabric according to Allen.

Second, we note that at least in some applications the coating layer is likely to be present throughout a significant portion of the cloth as in Allen (col. 5, lines 16-22). Certainly in those applications an artisan would understand that

the requisite compression/deformation necessary to prevent cracking of the coating may very well require more than superficial compression of the entire coated cloth. In this context we are well aware that Fan (page 2, para. 20) does not require impregnation of the carbon cloth and, indeed, considers it undesirable. Nevertheless, where impregnation is mandated (as in Allen), the requisite compression to reduce cracking would no doubt be considerable. Appellant has not shown otherwise.

Thus, selection of a particular value or range for a recognized result-effective variable (here compression or compressive force) to achieve optimum results is considered to be, prima facie, within the realm of ordinary skill absent a showing of any unexpected result. See In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Appellant also argues that his invention relates to the manufacture of a GDL which can be incorporated into a membrane electrode assembly (MEA), which includes a polymer electrolyte membrane (PEM), without increased shorting across the PEM even when the MEA is under compression. In contrast, the rolling step

of Fan is for the stated purpose of eliminating cracks in a surface coating.

This argument is unpersuasive essentially because appellant's claims are not limited to an MEA-type electrochemical cell which includes a PEM and, thus, relates to a GDL which may be used in another type of electrochemical cell.

Furthermore, at best appellant may have observed yet another advantage flowing from the teachings of the prior art. However, observation of another benefit which results from following a suggestion in the prior art is not ordinarily sufficient to establish a basis for patentability. In this context, see In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990); In re Kronig, 539 F.2d 1300, 1304, 190 USPQ 425, 427-28 (CCPA 1976); In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972); In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971).

For the foregoing reasons, the decision of the examiner is affirmed.

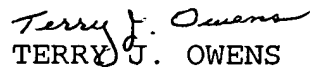
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No time period for taking any subsequent action in  
connection with this appeal may be extended under 37 CFR  
§ 1.136(a)(1)(iv).

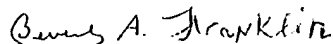
AFFIRMED



MARC L. CAROFF  
Administrative Patent Judge



TERRY J. OWENS  
Administrative Patent Judge



BEVERLY A. FRANKLIN  
Administrative Patent Judge

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